Supporting Information

Synthesis and Degradation Study of Cationic Polycaprolactone-Based Nanoparticles for Biomedical and Industrial Applications

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Table S1: PCL_2-based NPs: average particle size (Dp), polydispersity index (PDI) and ζ-potential of the NPs obtained through BEP

Macromonomer	Surfmer	S/M [w/w]	PEGMA/M [w/w]	Dp [nm]	PDI	ζ-POT [mV]
PCL_2MA	PCL_2ChMA	5 %	20%	115	0.045	+36
PCL_2MA	PCL_2ChMA	10 %	20 %	90	0.063	+40
PCL_2MA	PCL_2ChMA	15%	20 %	80	0.193	+43

Table S2: PCL_2-based NPs: average particle size (Dp), polydispersity index (PDI) and ζ-potential of the NPs obtained through MSSEP

Macromonomer	Surfmer	S/M [w/w]	PEGMA/M [w/w]	Dp [nm]	PDI	ζ-POT [mV]
PCL_2MA	PCL_2ChMA	2 %	20%	75	0.093	+34
PCL_2MA	PCL_2ChMA	8 %	20 %	64	0.105	+40
PCL_2MA	PCL_2ChMA	10 %	20 %	63	0.107	+41

Table S3: PCL_n-based NPs (n=2,3,5): average particle size (Dp), polydispersity index (PDI) and ζ-potential of the NPs obtained through MSSEP.

Macromonomer	Surfmer	S/M [w/w]	PEGMA/M [w/w]	Dp [nm]	PDI	ζ-POT [mV]
PCL_2MA	PCL_2ChMA	10%	20%	63	0.107	+41
PCL_3MA	PCL_3ChMA	10 %	20%	56	0.158	+39
PCL_5MA	PCL_5ChMA	10 %	20%	41	0.197	+40

Table S4: PCL_nChMA based NPs: average particle size (Dp), polydispersity index (PDI) and ζ-potential of the NPs obtained through BEP

Surfmer	PEGMA/M [w/w]	Dp [nm]	PDI	ζ-POT [mV]
PCL_2ChMA	20%	275	0.103	+54
PCL_3ChMA	20 %	115	0.1	+51
PCL_5ChMA	20 %	85	0.175	+49

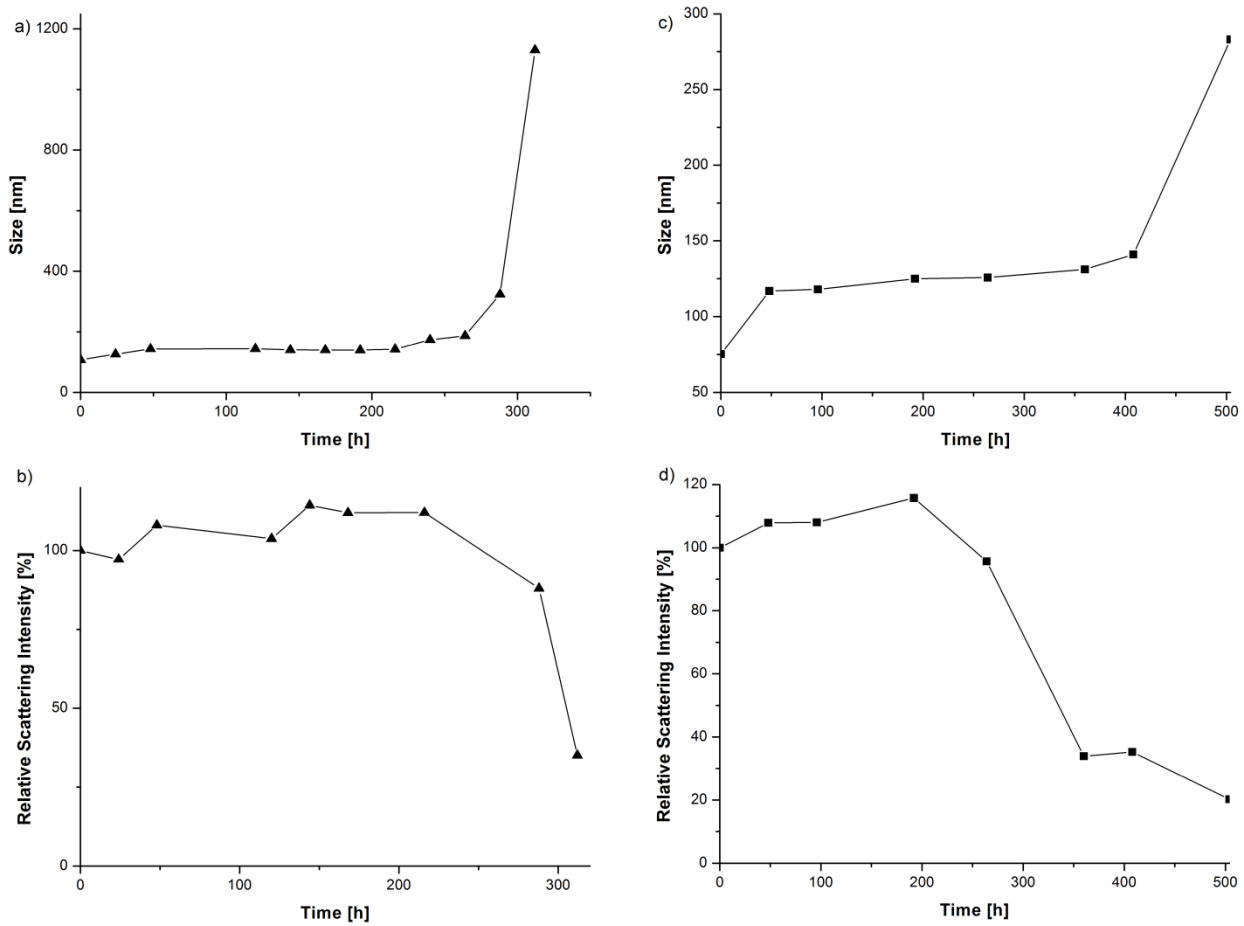

Figure S1: Evolution of the relative scattering intensity and the NP size for PCL_2-NPs (a,b) and PCL_3-NPs (c,d) in cell medium over the time at 37°C.

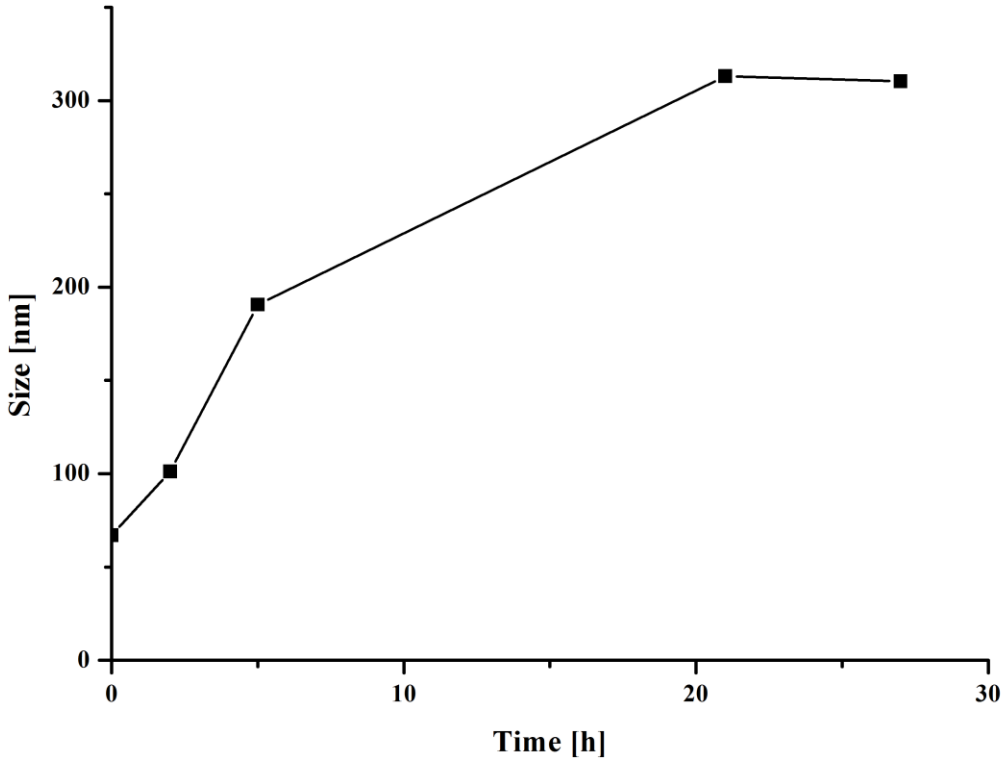

Figure S2: Variation of the PCL_3-NP size during the time at 90°C in water.

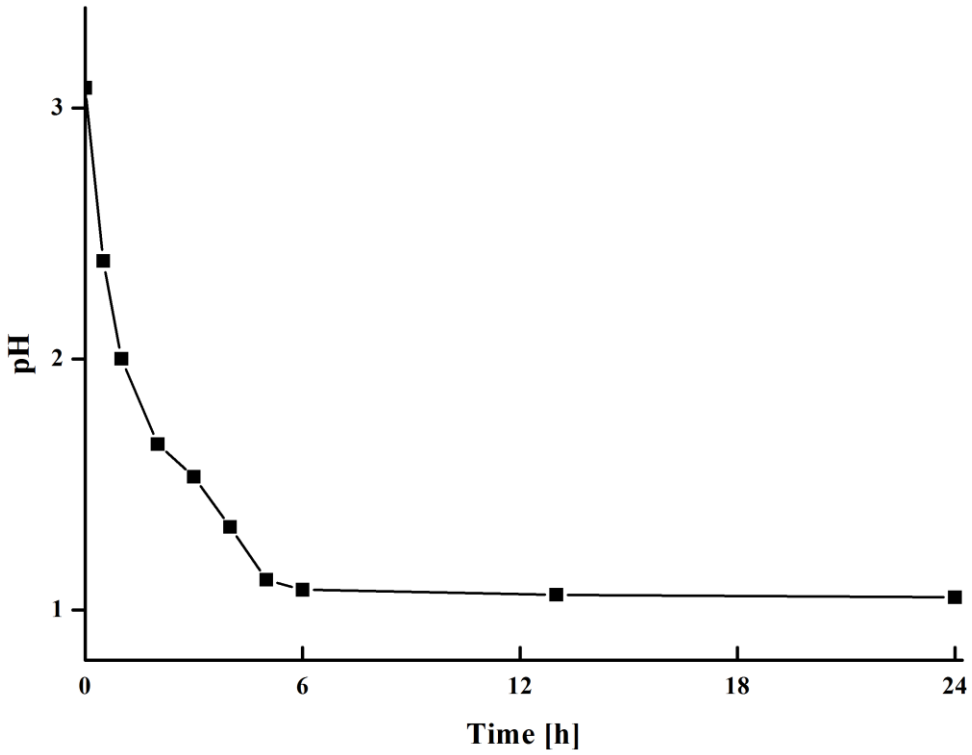

Figure S3: Variation of the pH over the time for PCL_3-NPs at 90°C.

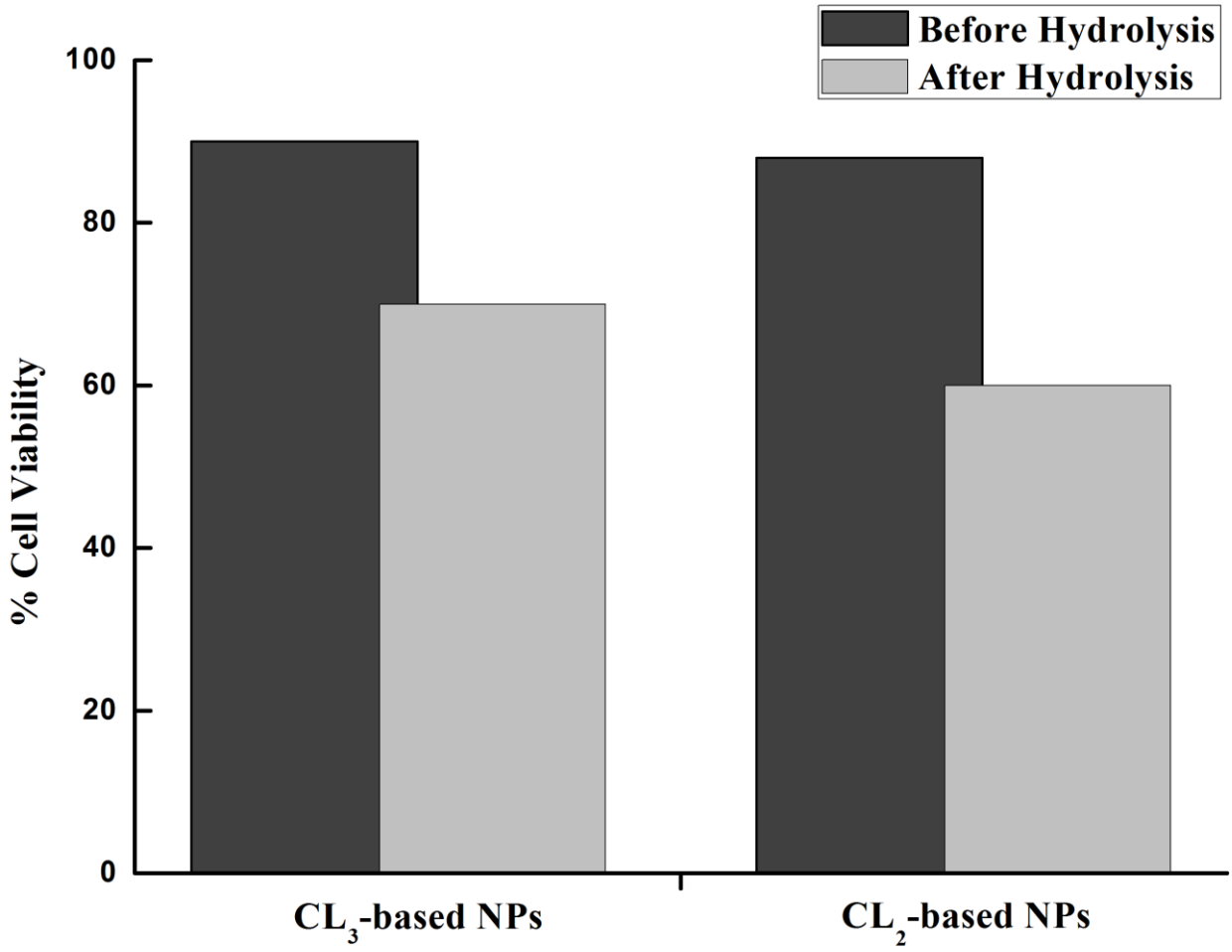

Figure S4: Cell viability before and after hydrolysis of two different CL_n-based NPs**.**

The higher toxicity after the hydrolysis is related to the pH decrease, according to the release of carboxylic acids. It is important to notice that this effect is strongly mitigated in vivo for the buffered environment.